

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/085706 A1

- (51) International Patent Classification⁷: C23F 1/18, (3/06, H01L 21/3213)
- (21) International Application Number: PCT/EP2004/002702
- (22) International Filing Date: 16 March 2004 (16.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 103 13 517.0 25 March 2003 (25.03.2003) DE
- (71) Applicant (for all designated States except US): ATOTECH DEUTSCHLAND GMBH [DE/DE]; Erasmusstrasse 20, 10533 Berlin (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): MAHLKOW, Hartmut [DE/DE]; Handjerystrasse 85, 12159 Berlin (DE). SPARING, Christian [DE/DE]; Ernststrasse 95, 13509 Berlin (DE).
- (74) Agent: EFFERT, BRESSEL UND KOLLEGEN; Radickestrasse 48, 12489 Berlin (DE).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A1

WO 2004/085706

(54) Title: SOLUTION FOR ETCHING COPPER SURFACES AND METHOD OF DEPOSITING METAL ON COPPER SURFACES

(57) Abstract: A solution for etching copper or a copper alloy for producing a copper surface having the brightest possible finish for a metallization that is to follow is described. The solution has a pH on the order of 4 or less and is free of sulfate ions. It comprises: a) at least one oxidizing agent selected from the group comprising hydrogen peroxide and peracids, b) at least one substance selected from the group comprising aromatic sulfonic acids and salts of the aromatic sulfonic acids and optionally c) at least one N-heterocyclic compound. Further a method for depositing metal onto the surface of copper or a copper alloy is described. Said method comprises the following method steps: a) contacting the surface with the solution in accordance with the invention and b) coating the surface with at least one metal. The solution and the method are especially suited in the production of electric circuit carriers, more specifically for semiconductor manufacturing.